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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,286	07/13/2001	Cem Basceri	MI22-1724	3892

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EXAMINER	
FULLER, ERIC B	

ART UNIT	PAPER NUMBER
1762	11

DATE MAILED: 04/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-11

Offic Action Summary	Application No.	Applicant(s)	
	09/905,286	BASCERI ET AL.	
	Examiner	Art Unit	
	Eric B Fuller	1762	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,7,9,10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicant has, by amendment, added the limitation that the gaseous metal streams and the oxidizer stream are provided simultaneously to the reactor. The specification fails to disclose this limitation for the following reasons:

The specification has not explicitly taught that the streams are simultaneously provided, nor has the limitation been implied, as the specification fails to teach that the mixing of the streams is performed prior to them entering the reaction chamber, or that the mixing is performed in the gaseous phase. Therefore, it has not been taught or implied that the precursors and oxidizers are supplied simultaneously. Either of the following two processes could as equally be read on by the specification:

1) To flow a specified amount of precursor into the reaction chamber followed by a specified amount of oxidizer (since the specification does not require mixing prior to the streams entering the reaction chamber).

2) To flow the precursor then evacuate the reaction chamber, resulting in a deposited film of precursor, and then flow the oxidizer (since the specification does not require that the mixing be performed in the gaseous phase or performed prior to entering the reaction chamber).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 2, 4, 6, 7, 9, 11 –24 are rejected under 35 U.S.C. 102(e) as being anticipated by Senzaki et al. (US 6,238,734 B1).

Senzaki teaches a method of producing mixed metal compound layers (abstract). The method may be performed by a CVD method. The precursors are mixed with the oxygen source prior to deposition (column 3, lines 35-38), which reads on simultaneously providing the streams. The deposited layer may be a mixed metal oxide (column 3, line 57). The metals may be made of at least strontium, barium, and titanium, among others (column 4, lines 14-30). The gaseous oxidizers that may be

used are oxygen, ozone, nitrous oxide, nitric oxide, nitrogen dioxide, water, hydrogen peroxide, air, and mixtures thereof (column 3, lines 40-43).

As to claims 4 and 9, although the reference is silent this parameter, it is the examiner's position, that since no steps are taken to alter the flow of any materials in the deposition, that the deposited layer is homogenous.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Senzaki et al. (US 6,238,734 B1).

Senzaki teaches the limitations of claims 1 and 6, as shown above. However, Senzaki fails to teach the use of a susceptor and fails to explicitly teach the temperature of the susceptor holding the substrate for the case of depositing a BST film. However it is taught that for a Zr, Sn, Ti –oxide film that the substrate is held at a constant temperature of 240 – 300 degrees Celsius. To use a susceptor to hold the substrate would have been obvious at the time the invention was made to a person having ordinary skill in the art, as they are well known in the art for holding substrates at a constant temperature. It also would have been obvious at the time the invention was

made to a person having ordinary skill in the art to use a temperature near this range for the deposition of a BST film, as the films are substantially similar.

Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Senzaki et al. (US 6,238,734 B1), as applied to claims 1 and 6 above, and further in view of Kang (US 6,127,218).

Senzaki teaches the methods of claims 1 and 6 as shown above and further teaches that the mixed metal oxide films are for use in the semiconductor industry, but fails to teach that the layer is not homogenous. However, Kang teaches a process where by adjusting the oxidant stream, it is possible to adjust the composition of the BST film. By having multiple layers of differing composition, the dielectric constants are increased and the leakage currents are decreased (column 2, lines 45-50). These trends are desirable for ferroelectric films, which are used in the semiconductor industry. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to adjust the oxidant stream such that layers of differing composition are produced, as taught by Kang, in the method of Senzaki. By doing so, one would reap the benefits of increasing the dielectric constant of the film and reducing the leakage current, making for a better ferroelectric film.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 6, 7, 8, 10, and 18-24 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3 of copending Application No. 09/776,217. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the present invention cannot be practiced without infringing the limitations of claims 1 and 3 of the prior application. .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant argues that DiMeo, Jr. et al. (US 5,972,430), used as prior art in the rejections of the previous Office Action, teaches away from having the precursors and the oxidizers be provided simultaneously, which has been added by amendment to the independent claims. Examiner agrees and has therefore replaced the previous rejections, based on DiMeo, Jr., with the ones of the present Office Action. Applicant's arguments are moot in view of the new grounds of rejection.

Applicant argues that the phrase "or the like" in Stauf et al. (US 6,277,436 B1) would not lead one skilled in the art to utilize water or hydrogen peroxide as oxidizers. Examiner agrees for cases when the reference is taken alone. However, when combined with references such as DiMeo, Jr. et al. (US 5,972,430), which teaches a group of oxidizers comprising those of Stauf plus water and hydrogen peroxide, one skilled in the art would recognize that water and hydrogen peroxide may be utilized as oxidizers and qualify as "or the like". In either case, this argument is irrelevant to the current Office Action, as Stauf et al. has not been relied upon.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on January 14, 2002 prompted the new Double Patenting rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (703) 308-6544. The examiner can normally be reached on Tuesday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

EBF
April 25, 2002

TIMOTHY MEEKS
PRIMARY EXAMINER